

This section provides information on safety hazards in the City of Elk Grove Planning Area (Planning Area). The reader is referred to Section 4.7 (Air Quality) for information regarding air quality hazards, Section 4.8 (Hydrology and Water Quality) for information regarding impacts associated with water quality and flooding, and Section 4.9 (Geology and Soils) for information regarding impacts associated with geologic and seismic hazards.

4.4.1 EXISTING SETTING

HAZARDOUS MATERIALS DEFINED

A material is considered hazardous if it appears on a list of hazardous materials prepared by a Federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the California Code of Regulations (CCR) as:

...A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed (California Code of Regulations, Title 22, Section 66260.10).

Chemical and physical properties that cause a substance to be considered hazardous, including the properties of toxicity, ignitability, corrosivity, and reactivity, are defined in the CCR, Title 22, Sections 66261.20 - 66261.24. Factors that influence the health effects of exposure to hazardous material include the dose to which the person is exposed, the frequency of exposure, the exposure pathway, and individual susceptibility.

Hazardous Materials Sites Within the Planning Area

The State of California Hazardous Waste and Substances Site List (also known as the "Cortese List") is a planning document used by state, local agencies, and developers to comply with the California Environmental Quality Act (CEQA) requirements in providing information about the location of hazardous materials sites. Government Code Section 65962.5 requires the California Environmental Protection Agency (EPA) to annually update the Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for preparing a portion of the information that comprises the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information that is part of the complete List. CAL-SITES (ASPIS) Database is compiled by the California Environmental Protection Agency (Cal-EPA) to identify and track potential hazardous waste sites. In addition to the Cortese List and CAL-SITES, the County of Sacramento's Department of Environmental Health also maintains lists of hazardous material sites, releases and accident occurrences. Searches of the above resources and records identified 40 hazardous material sites in the vicinity of the Planning Area known to handle and store hazardous materials and are associated with a hazardous material related release or occurrence. The terms "release" or "occurrence" includes any means by which a substance could harm the environment: by spilling, leaking, discharging, dumping, injecting or escaping. **Table 4.4-1** displays all of the known hazardous material sites within the Planning Area (see **Figure 4.4-1**).

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**TABLE 4.4-1
KNOWN HAZARDOUS MATERIAL RELEASE SITES IN THE VICINITY OF THE PLANNING AREA**

Facility Name	Street Number and Name	City	Zip Code	Case Type	Status Active? Yes/No
1) RCCC-Sheriff's Substation	12500 Bruceville Road	Elk Grove	95624	Undefined	No
2) Floyd Pederson Ventures	7927 Elk Grove Blvd	Elk Grove	95624	Soil	No
3) Laguna 99 Cleaners	8451 Elk Grove Blvd	Elk Grove	95624	Undefined	Yes
4) Baker Wells and Pumps	8460 Elk Grove Blvd	Elk Grove	95624	Undefined	No
5) Tosco #30970	8475 Elk Grove Blvd	Elk Grove	95624	Undefined	No
6) Arco #2123	8500 Elk Grove Blvd	Elk Grove	95624	Soil	No
7) Shell Oil Products	8607 Elk Grove Blvd	Elk Grove	95624	Soil	Yes
8) Regal SS (former)	8900 Elk Grove Blvd	Elk Grove	95624	Soil	No
9) Shell SS	8901 Elk Grove Blvd	Elk Grove	95624	Undefined	Yes
10) Circle-K (former)	8949 Elk Grove Blvd	Elk Grove	95624	Soil	No
11) Unocal #4829	8999 Elk Grove Blvd	Elk Grove	95624	Undefined	No
12) Arco	9000 Elk Grove Blvd	Elk Grove	95624	Undefined	No
13) Horning Property	9020 Elk Grove Blvd	Elk Grove	95624	Undefined	Yes
14) Elk Grove Paint and Wallpaper	9097 Elk Grove Blvd	Elk Grove	95624	Groundwater	No
15) Arco #5696	9215 Elk Grove Blvd	Elk Grove	95624	Soil	No
16) Harcrow Property	9251 Elk Grove Blvd	Elk Grove	95624	Soil	No
17) Elk Grove Milling Inc.	8320 Eschinger	Elk Grove	95624	Undefined	No
18) Gil's Garage	10413 Franklin Blvd	Elk Grove	95624	Soil	No
19) Transcon Lines	10401 Grant Line Rd	Elk Grove	95624	Undefined	No
20) Ward's Texaco SS	8995 Grant Line Rd	Elk Grove	95624	Undefined	No
21) Crump Residence	9674 Kent St	Elk Grove	95624	Soil	No
22) Mel Oneto	8490 Lambert Rd	Elk Grove	95624	Soil	No
23) Charles W & Audrey Stanton	5925 Pine Vista	Elk Grove	95758	Undefined	No
24) Fred Cullincini Trust	9676 Railroad	Elk Grove	95624	Undefined	No
25) FAA Remote Repeater	Rodgers Rd	Elk Grove	95624	Undefined	No
26) Kalwani Property	8151 Sheldon Rd	Elk Grove	95624	Soil	No
27) Flying "V" SS (former)	10473 Stockton Blvd	Elk Grove	95624	Groundwater	No
28) E & J Market (former SS)	8706 Stockton Blvd	Elk Grove	95624	Soil	No
29) Century Equipment	8821 Stockton Blvd	Elk Grove	95624	Soil	No
30) Citizens	9260 E Stockton Blvd	Elk Grove	95624	Undefined	No

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Facility Name	Street Number and Name	City	Zip Code	Case Type	Status Active? Yes/No
31) Walt Davis Chevy	9501 Stockton Blvd	Elk Grove	95624	Undefined	No
32) Elk Grove Exxon	9603 E Stockton Blvd	Elk Grove	95624	Undefined	Yes
33) Georgia-Pacific	10399 Stockton Blvd	Elk Grove	95624	Soil	Yes
34) Residence	9800 Waterman	Elk Grove	95624	Undefined	Yes
35) Kingsford Production Co	10000 Waterman Rd	Elk Grove	95624	Soil	No
36) Conoco Asphalt Terminal	10090 Waterman Rd	Elk Grove	95624	Soil	No
37) World Asphalt	10144 Waterman Rd	Elk Grove	95624	Soil	No
38) Paul Ward's Texaco (former)	10415 Wilton Rd.	Elk Grove	95624	Soil	No
39) Elk Grove Unified School District	8820/8800 Elk Grove Blvd	Elk Grove	95624	Undefined	No
40) Govan Property	10464 Franklin Blvd	Franklin	95758	Soil	No

Source: Department of Toxic Substances Control, 1998-2003.

It should be noted that none of the sites listed in **Table 4.4-1** are currently on the "Cortese List." An "active" status does not mean that the site poses an environmental or human safety risk, only that there is a hazardous material occurrence associated with the facility and that the site is presently undergoing remediation or is under further regulatory review.

In addition to the sites listed in **Table 4.4-1**, the abandoned Sonada Nursery, which was located on the northern and southern sides of Bond Road and east of Bradshaw Road, used underground storage tanks (USTs) for its operations. Anderson Geotechnical Consulting conducted a Preliminary Site Assessment (PSA) for the Sonada property site in October 1989. According to the Assessment, a review of the file at the Sacramento County Health Department revealed that four USTs were installed in 1975. The 1,000-gallon fuel tank was removed in August of 1988 with no sign of contamination being detected by the county inspector after removal of the tank. The Sonada property was not on the Cortese List, on the National Priority List (NPL), or in the CERCLIS database. Additionally, the Sonada site was not included on the Abandoned Site Program Information System, which is used by the DTSC to identify sites that may have been contaminated with hazardous materials.

Transportation of Hazardous Materials

The transportation of hazardous materials within the Planning Area is subject to various federal, state, and local regulations. The only roadway and transportation route approved for the transportation of explosives, poisonous inhalation hazards, and radioactive materials in the City of Elk Grove Planning Area is Interstate 5. According to the Elk Grove Police Department, it would not be possible to identify the roads that could be used for local delivery, since any delivery of swimming pool chlorine would be considered transportation of an inhalant hazard. It is likely that the majority of such deliveries would be to industrial areas concentrated along Grant Line Road and State Route 99. The following provisions are included in the California Vehicle Code and pertain to the transportation of hazardous related materials.

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- The Highway Patrol designates the routes in California, which are to be used for the transportation of explosives. (Section 31616)
- The CVC applies when the explosives are transported as a delivery service for hire, or in quantities in excess of 1,000 pounds. The transportation of explosives in quantities of 1,000 pounds or less, or other than on a public highway, is subject to the California Health and Safety Code. (Section 31601(a))
- It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery of, or the loading of, such materials. (Section 31602(b) and Section 32104(a))
- When transporting explosives through or into a city for which a route has not been designated by the Highway Patrol, drivers must follow routes as may be prescribed or established by local authorities. (Section 31614(a))
- Inhalation hazards and poison gases are subject to additional safeguards. These materials are highly toxic, spread rapidly, and require rapid and widespread evacuation if there is loss of containment or a fire. The Highway Patrol designates through routes to be used for the transportation of inhalation hazards. It may also designate separate through routes for the transportation of inhalation hazards composed of any chemical rocket propellant. (Section 32100 and Section 32102(b))

In addition to area roadways, hazardous materials are routinely transported on existing railroad facilities that pass through both the existing City limits and the Planning Area. The Union Pacific Railroad (UPRR) is within the existing City limits and runs diagonally north to south and is located east of SR-99. The Central California Traction Railroad (CCTRR) runs north to south near the eastern portion of the Planning Area and is also located within the existing city limits.

Major Hazardous Material Handling Facilities in the Planning Area

There are two major industrial facilities that potentially pose offsite safety hazards within the Planning Area: the Suburban Propane facility, which is located at 10450 Grant Line Road, and the Georgia Pacific Resins facility, which is located at 10399 East Stockton Boulevard. Both facilities are within the Elk Grove City limits. Existing land uses within a one-half mile radius of these facilities consist of light and heavy industrial, office, commercial, residential and agricultural. Several studies have been conducted to determine the site-specific risks and evaluate the consequences that could be attributed to these facilities, including:

- Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities by Quest Consultants in June 2003 (see **Appendix 4.4**).
- A Screening-Level Hazard Analysis prepared by Dames and Moore in March 1992 and a second Screening-Level Hazard for Propane Emergency Release in May 1998.
- A “worst-case” scenario for possible predictable occurrences at the Suburban Propane facility, prepared by John Jacobus, Ph. D., in November 1999.
- A Quantitative Risk Analysis for both the Suburban Propane and Georgia-Pacific Resins facilities, prepared by Quest Consulting in August 2000.
- The Suburban Propane Hazard Assessment, Joint Fire and Law Hazard Assessment Work Group for Suburban Propane facility, prepared by Dunbar and Jukes in November 1999.

These studies analyzed the hazard types, incidence scenarios, worst-case effects and the extent of those effects, specific conditions associated with worst-case effects, and approximate probabilities associated with each scenario. Offsite hazards to human health and property associated with incident at Suburban Propane and Georgia-Pacific facility identified in these reports include the following:

- **Vapor cloud explosion** from a release at Suburban Propane that generates an overpressure. A 1.0 pounds per square inch gauge (psig) overpressure is not high enough to cause a fatality directly. However, it is high enough to cause a person to be knocked to the ground and be injured. In addition, a 1.0 psig can damage structures.
- **Radiant heat** of 200 kilojoules per square meter (kJ/m²) can result in second-degree skin burns. This dose can be achieved by exposing a person to 5 kilowatts per square meter (kW/m²) for 40 seconds or 10 kW/m² for 20 seconds.
- **Flash fire**, the lower flammable limit (LFL) defines the boundary of the flammable cloud. Persons outside the cloud are not harmed by the flash fire that heads back to the source if the cloud ignites. Persons inside the cloud can be burned or killed.
- **Shrapnel**, the danger to a person or property from shrapnel is one of being hit. The probabilities are extremely low in all cases since only a small number of shrapnel pieces are generated per failure.
- **Formaldehyde exposure**, the most serious hazard associated with the exposure to formaldehyde vapor evolving from a spill of formalin is prolonged exposure (up to 60 minutes) to concentration levels at or above 25 parts per million (ppm). This results in a toxic dose of 1,500 ppm-min. (25 ppm x 60 minutes). This dose will allow a person to be exposed without experiencing or developing life-threatening health effects.

A summary of hazards identified in these reports is provided in **Table 4.4-2**. With the exception of the Quest reports (2000 and 2003), none of the previously mentioned reports provide any quantification of the probability of an accidental or intentional incident at either facility resulting in human injury, death, or property damage. A further analysis of hazards and the probability of an incident associated with these facilities on the City is provided in Section 4.4.3 (Impacts and Mitigation Measures) below.

Suburban Propane

The Suburban Propane Elk Grove Facility is considered one of the largest above ground propane storage facilities in the United States. This facility receives pressurized ambient temperature liquid propane from tank trucks and railcars, and stores both ambient temperature and refrigerated liquid propane, and loads ambient temperature propane for offsite transport.

The major components at the Suburban Propane facility include four 60,000-gallon pressurized, ambient temperature propane storage tanks (herein referred to as "bullet tanks"), two 12,000,000-gallon refrigerated, low pressure storage tanks, tank truck and railcar loading/unloading stations, a propane refrigeration system, a flare, and safety systems such as the water spray system in place in the railcar and truck loading area. The propane storage bullet tanks are approximately 12 feet in diameter and 91 feet long, placed horizontally on concrete supports about 5 feet above the ground. The large refrigerated propane storage tanks are approximately 146 feet in diameter and 122 feet tall.

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**Table 4.4-2
Summary of Hazardous Scenarios**

Report	Scenario ID	Description of Scenario	Hazards of Interest				
			Vapor Cloud Explosion	Fire	Shrapnel	Blast Wave from Tank Failure	Toxic Cloud
Jacobus	J-1	Major failure of two refrigerated propane tanks at the same time	X	Pool			
Jacobus	J-2	Major failure of one refrigerated propane tank	X	Pool			
Jacobus	J-3	Simultaneous catastrophic failure of all four pressurized propane storage tanks	X	Fireball			
Jacobus	J-4	Catastrophic failure of one pressurized propane storage tank	X	Fireball			
Jacobus	J-5	Catastrophic failure of one 33,000-gallon pressurized propane railcar	X	Fireball			
Jacobus	J-6	Catastrophic failure of one 10,000-gallon pressurized propane tank truck	X	Fireball			
Dames & Moore	DM-1	Catastrophic failure of one pressurized propane storage tank		Fireball		X	
Dames & Moore	DM-3	Full-bore rupture of a 3-inch diameter pipe containing refrigerated propane	X	Flash			
Dames & Moore (second report)	DM-4	Full-bore rupture of a 6-inch diameter pipe containing refrigerated propane	X	Flash			
Jukes and Dunbar	JD-1	Catastrophic failure of one 33,000-gallon pressurized propane railcar	X	Flash Fireball	X	X	
Jukes and Dunbar	JD-2	Major failure of one refrigerated propane tank	X	Flash			

**Table 4.4-2
Summary of Hazardous Scenarios
(Continued)**

Report	Scenario ID	Description of Scenario	Hazards of Interest				
			Vapor Cloud Explosion	Fire	Shrapnel	Blast Wave from Tank Failure	Toxic Cloud
Jukes and Dunbar	JD-3	Major failure of two refrigerated propane tanks at the same time	X	Flash			
Jukes and Dunbar	JD-4	Major failure of the formalin tank at Georgia-Pacific					X
Koopman	K-1	Major failure of two refrigerated propane tanks at the same time	X	Flash			
Koopman	K-2	Major failure of one refrigerated propane tank	X	Flash			
Koopman	K-3	Simultaneous catastrophic failure of all four pressurized propane storage tanks	X	Fireball	X		
Koopman	K-4	Catastrophic failure of one pressurized propane storage tank	X	Fireball			
Koopman	K-5	Major failure of the formalin tank at Georgia-Pacific					X
Quest	Q-1	Major failure of two refrigerated propane tanks at the same time	X	Pool Flash			
Quest	Q-2	Major failure of one refrigerated propane tank	X	Pool Flash			
Quest	Q-3	Catastrophic failure of one pressurized propane storage tank	X	Fireball Flash	X	X	
Quest	Q-4	Catastrophic failure of one 60,000-gallon pressurized propane railcar	X	Fireball Flash	X	X	

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Table 4.4-2
Summary of Hazardous Scenarios
(Continued)

Report	Scenario ID	Description of Scenario	Hazards of Interest				
			Vapor Cloud Explosion	Fire	Shrapnel	Blast Wave from Tank Failure	Toxic Cloud
Quest	Q-5	Catastrophic failure of one 10,000-gallon pressurized propane tank truck	X	Fireball Flash	X	X	
Quest	Q-6	Full-bore rupture of a 3-inch diameter pipe containing refrigerated propane	X	Pool Torch Flash			
Quest	Q-7	Full-bore rupture of a 6-inch diameter pipe containing refrigerated propane	X	Pool Torch Flash			
Quest	Q-8	Major failure of the formalin tank at Georgia-Pacific					X

Source: Quest, 2003

Propane is received at the facility as pressurized, ambient temperature liquid carried in tank trucks or railcars. The tank trucks have a typical capacity of 10,000 gallons and the railcars a typical capacity of 33,000 gallons. Propane is transferred from tank trucks to the storage bullet tanks using pumps mounted on the trucks. Propane is moved from the railcars to the storage bullet tanks by increasing the pressure in the railcars using a compressor. The compressor takes vapor from the four pressurized, ambient temperature storage vessels, increases the pressure of the vapor, and uses the higher pressure vapor to force liquid from the railcars into the storage bullet tanks. The propane bullet tanks' liquid lines are manifolded together, with the liquid inlet valves normally open on all four tanks. This provides for maximum surge capacity for the pressurized propane storage system.

Propane stored in the pressurized, ambient temperature bullet tanks is used to fill tank trucks or railcars for off-site delivery. The filling operation involves using centrifugal pumps to move the ambient temperature liquid propane from the bullet tanks to the tank truck/railcar. The vapor displaced by the liquid filling is returned to the bullet tanks. Propane from the bullet tanks is also transferred to the refrigerated tanks using the pressure difference between the pressurized bullet tanks and the near atmospheric pressure in the refrigerated storage tanks. The pressurized liquid from the bullet tanks is mixed with cold propane liquid and fed to the bottom of each refrigerated tank, where the pressurized liquid depressurizes and mixes with the cold liquid in the tank. The vapor produced by the depressurization is removed by way of a vapor line at the top of each tank, heated in a compressor preheater, compressed, cooled, and liquefied. The warm pressurized liquid is then flashed to produce cold propane liquid and flash vapor. The cold flash vapor is recycled through the preheater, compressor, and heat exchanger to produce more cold liquid. The propane refrigeration system is designed to handle vapor volumes from both normal heat leak into the refrigerated tanks and the larger volume of vapor produced by a full-rate transfer of ambient temperature pressurized liquid in the hot summertime.

The large refrigerated storage tanks serve as storage reservoirs that can absorb the seasonal swings in propane demand. Liquid propane can be moved from the refrigerated storage tanks to the pressurized bullet tanks using centrifugal pumps. The cold liquid is first pumped to a pressure higher than found in the bullet tanks. The pressurized cold liquid is heated, using a remotely-fired glycol heater, to near ambient temperature, and flows to the pressurized bullet tanks. Each refrigerated tank can supply propane to the bullet tanks at a rate of 250 gallons per minute (gpm).

The ambient temperature propane storage bullet tanks are protected from overpressure by multiple pressure relief valves located on the top of each tank. A water spray system protects each bullet tank from excessive heating due to fire exposure. The refrigerated storage tanks are equipped with pressure and liquid level gauges, liquid overflow vents, pressure relief valves, vacuum breakers, and a vent line to the facility flare. The vent line to the flare is passed through a water seal with a 20-inch head of water. When the tank pressure exceeds 20 inches of water (about 0.7 pounds per square inch [psi]), vapor flows from the refrigerated storage tank through the water seal and into the flare stack. If pressure in the refrigerated tanks continues to increase, pressure relief valves located at the top of the tank open, venting vapor to the atmosphere. Further increases in pressure (above 1 psig [pounds per square inch gauge]) result in the venting of vapor from a large weighted relief valve on the tank roof.

The tank truck and railcar loading/unloading facilities are both equipped with water deluge systems. In the event of a fire in either of these areas, the deluge systems should help prevent tank trucks and railcars from failing catastrophically due to excessive heat and internal pressure.

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Georgia-Pacific Resins Facility

The largest quantity of formalin at the Georgia-Pacific facility is contained in Tank 105. This is an above-ground tank of welded steel construction. It has a nominal capacity of 40,000 gallons and is insulated. Formalin (a mixture of formaldehyde and water) within the tank is heated in order to maintain its temperature at about 140 degrees Fahrenheit. Tank 105 is surrounded by a concrete containment structure that is large enough to hold the entire contents of the tank. The "pool area" of the concrete containment is approximately 11,120 square feet. Based on the physical characteristics of the materials stored on the Georgia-Pacific facility, formaldehyde would pose the largest problem following a large accidental release.

Formaldehyde is a colorless gas that can be toxic at certain levels by inhalation, ingestion, or physical contact. The odor of formaldehyde has a pungent, hay like smell at concentrations well below 1.0 ppm, which would provide ample warning to people and emergency response personnel in the vicinity of a release and allow them to move away from the source of toxic vapor.

Known and Unknown Hazardous Materials in the Planning Area

Asbestos Containing Building Materials

Structures constructed or remodeled between 1930 and 1981 have the potential to contain asbestos containing building materials (ACBM). These materials may include, but are not limited to floor coverings, drywall joint compounds, acoustic-ceiling tiles, piping insulation, electrical insulation and fireproofing materials. Asbestos is a general name for a group of naturally occurring minerals composed of small fibers. It is common in many building materials. Various diseases have been associated with exposure to asbestos fibers, and the extensive use of asbestos in building materials has raised some concern about exposure in non-industrial settings. Health hazards associated with ACBMs include increased risks of cancer and respiratory related illnesses and diseases. The presence of asbestos in a building does not mean that the health of building occupants is endangered. As long as asbestos-containing materials remain in good condition and are not disturbed or damaged, exposure is unlikely. On the other hand, damaged, deteriorated, or disturbed asbestos-containing materials can lead to fiber release (exposure), and unauthorized removal or disturbance of asbestos materials could result in adverse health effects. There are numerous buildings and structures within the Planning Area that were constructed between 1930 and 1981. The potential safety hazards resulting from ACBMs are greatest during demolition activities.

Lead Based Materials

Exposure to lead from older vintage paint is possible when the paint is in poor condition or during paint removal. In construction settings, workers can be exposed to airborne lead during renovation, maintenance or removal work. Lead-based paints were phased out of production in the early 1970s. Lead is a highly toxic metal that was used for many years in products found in and around homes. Lead may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death. Children 6 years old and under are most at risk. Research suggests that the primary sources of lead exposure for most children are: deteriorating lead-based paint, lead contaminated dust, and lead contaminated residential soil. Many of the buildings and structures within the Planning Area were constructed prior to the ban on lead-based paints and, therefore, it is likely that these materials are present throughout the Planning Area. Proper handling and disposal of lead based materials significantly reduces potential environmental related impacts. In addition to lead associated with household uses, it is likely

that aerially deposited lead is present along some of the roadways in the Planning Area. This is of primarily a concern along SR 99 and Interstate 5, where there are substantial amounts of traffic volumes. Aerially deposited lead is lead deposited within unpaved areas or formerly unpaved areas, primarily due to vehicle emissions. Aerially deposited lead is typically found within the top 0.6-m of material in unpaved areas within heavily traveled roadway rights-of way.

PCB Transformers

In 1976, the United States Congress enacted the Toxic Substances Control Act (TSCA), which gave the Environmental Protection Agency (EPA) the ability to track all industrial chemicals imported into and used in the U.S. The EPA repeatedly screens these chemicals and can require reporting or testing of those that may pose an environmental or human health hazard. The EPA can ban the manufacture and import of those chemicals that pose an unreasonable risk. The TSCA directed the EPA to ban the manufacture of PCBs and regulated their use and disposal. The EPA accomplished this by the issuance of regulation in 1978. Generally, sources of PCBs include fluorescent light ballast and electric transformers. Both of these potential PCB containing sources are located within existing City limits and the unincorporated portions of the Planning Area. The Sacramento Municipal Utility District (SMUD) provides electric service to the entire Planning Area and is responsible for the operation, maintenance and repair of transformers and electrical facilities. The Environmental Protection Agency (EPA) maintains the PCB Activity Database (PADS) that identifies generators, transporters, commercial storers, and brokers and disposers of PCBs. SMUD is subject to EPA regulations regarding PCB transformers and is required to notify EPA of any PCB related activities or incidences. Therefore, it is SMUD's practice to routinely identify and replace all leaking and PCB containing transformers within its service area boundaries.

Residual Agricultural Chemicals

The Planning Area is associated with a variety of agricultural uses. Currently, the main agricultural uses in the Planning Area include row crops, field crops, orchards, vineyards, dairy operations, and cattle grazing lands. Wine grapes, walnuts and pears are the most widely produced crops in the Planning Area. Most of the Planning Area's agricultural land is outside the existing city limits. The Planning Area includes approximately 59,000-acres of agricultural land, with nearly 8,650-acres within the existing City limits. The majority of the agricultural land within the City limits is fallow (vacant or underutilized), except for small strawberry fields and other small agricultural operations.

Residual chemicals associated with current and past agricultural activities and dairy operations may be present at differing levels in the Planning Area. Irrigated pasture, dry-farmed crops and natural grasses typically require little to no applications of environmentally persistent pesticides. Although, cultivated irrigated row crops may have been subject to applications of restricted agricultural chemicals, restricted compounds are not necessarily persistent compounds. An example of a restricted but not persistent group of agricultural chemicals would be the triazine herbicides, which are often applied to corn crops. Over-the-counter insecticides and herbicides may have been used in the Planning Area; however, these chemicals generally do not persist in soils for greater than one year from application. Orchards and orchard-cultivated soils in the Planning Area may have been contaminated through the repeated application of agricultural chemicals to fruit or nut trees. Specifically, organochlorine pesticides, a "family" of compounds which includes DDT and its degradation compounds DDD and DDE, as well as lead-arsenates may have been applied to the orchards or used in dairy operations.

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AIRPORT OPERATIONS HAZARDS

There are no air related facilities in the existing City limits; however, there are four airports in the general vicinity of the Planning Area. Portions of the comprehensive land use planning boundaries of the Borges/Clarksburg Airport, Mather Airport, Franklin Field, and the Elk Grove Airport/Sunset Sky Ranch falls within the Planning Area. The Borges/Clarksburg Airport is located at 54258 South River Road in the town of Clarksburg. Mather Airport is located at 3745 Whitehead Street, in Rancho Cordova. Franklin Field is located at 12480 Bruceville Road, and the Elk Grove Airport/Sunset Sky Ranch is located at 9925 Grant Line Road. Airport-related hazards are generally associated with aircraft accidents, particularly during takeoffs and landings. Airport operation hazards include incompatible land uses, power transmission lines, wildlife hazards (e.g., bird strikes), and tall structures that penetrate the imaginary surfaces surrounding an airport.

RAILROAD-AT-GRADE CROSSINGS

There are several at-grade crossings in the Planning Area including six within the existing city limits. By their nature, at-grade railroad crossings often contribute to traffic problems, delays and accidents. The at-grade crossings in the City have led to increased traffic delays and in some incidences resulted in accidents between motor vehicle and trains. The existing at-grade crossing are located at Calvine Road, Sheldon Road, Elk-Grove Florin Road, Bond Road, Elk Grove Boulevard, and Grant Line Road.

The rail corridors in the City limits are generally used for the movement of freight; however, there are a limited number of passenger trains (Amtrak) that use this corridor on a daily basis. There are an average of 22 trains per day traveling in both the northbound and southbound directions. The trains traveling on this corridor average speeds between 65 to 70 miles per hour (mph). To promote safety, most at-grade crossings in the Planning Area have a combination of warning devices, such as warning signs, flashing lights, and crossing arms. The City initiated a study, conducted by Carter Burgess to investigate grade separation alternatives, which was completed in May 2002. The study identified enhancements for safety, cost estimates, and the potential impacts to adjacent properties, the roadway system and traffic flow. The study included features, traffic data and accident information, and improvement recommendations for each facility, which are summarized below.

The rail crossing at Elk Grove Boulevard consists of two sets of tracks, one through track and one rail siding. The siding is currently being updated and expanded to accommodate longer trains. The current 24-hour delay at this crossing is approximately 1 hour and 9 minutes per day. The average delay time is slightly over three minutes per train. In February of 2001, there was an accident between a train and a vehicle that resulted in a fatality. The California Public Utilities Commission (CPUC) has approved funding for upgrades to this crossing, which will include new signals, arms and a raised median to prevent vehicular traffic from going around the crossing arms. The crossing at Elk Grove-Florin Road consists of a single-track that crosses the roadway at a 74-degree skew. Whitehouse Creek and a large drainage ditch cross under the tracks in the vicinity of this crossing. The average 24-hour delay time is approximately 36 minutes, or less than two minutes per train. There have been no accidents associated with this crossing since 1995. The City has applied for approval to install an automated warning horn system at the crossing, which is currently under review with the CPUC.

The Bond Road railroad crossing consists of a single-track, which crosses the roadway and a 16-degree skew. The current delay at this crossing is approximately 33 minutes over a 24-hour period or 1.5 minutes per train. There are no reported accidents at this facility since 1995. The

City has a designated project to widen Bond Road from the Elk Grove-Florin Road intersection eastward across the railroad tracks. Additionally, the City of Elk Grove has applied for approval to install an automated warning horn system at this crossing. The application is currently under review by the CPUC. The features at the Grant Line Road crossing consist of a Standard No. 9 signal, which includes single crossing arms with lights for each direction of travel and "railroad signal ahead" pavement markings. Train traffic at this crossing currently results in a daily average of 1 hour 23 minutes (over a 24-hour period). The average delay is approximately 4 minutes (based on 22 trains per-day). There has been one documented accident since April of 1996 at this crossing, which did not result in an injury or fatality. A future interchange is planned for Grant Line Road due to several proposed projects northwest of the intersection of SR 99 and Grant Line Road. Additionally, the SACOG 2025 Transportation Plan calls for a Highway 50/SR 99 connector that will connect the facilities in the vicinity of Grant Line Road. Depending on the layout, improvements to this railroad crossing could incorporate future improvements necessary for the connector. The at-grade crossings at Calvine Road and Sheldon Road were not included in the study, as they lie outside the current City limits.

4.4.2 REGULATORY FRAMEWORK

FEDERAL

Environmental Protection Agency

The EPA provides leadership in the nation's environmental science, research, education and assessment efforts. The EPA works closely with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. EPA is responsible for researching and setting national standards for a variety of environmental programs and delegates to states and tribes responsibility for issuing permits, and monitoring and enforcing compliance.

Other Federal Agencies

Other Federal agencies that regulate hazardous materials include the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the National Institute of Health (NIH). The following federal laws and guidelines govern hazardous materials.

- Federal Water Pollution Control
- Clean Air Act
- Occupational Safety and Health Act
- Federal Insecticide, Fungicide, and Rodenticide Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Guidelines for Carcinogens and Biohazards
- Superfund Amendments and Reauthorization Act Title III
- Resource Conservation and Recovery Act
- Safe Drinking Water Act
- Toxic Substances Control Act

Table 4.4-3 lists federal, state, and local regulatory agencies that oversee hazardous materials handling and hazardous waste management, and the statutes and regulations that they administer.

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**TABLE 4.4-3
SUMMARY OF HAZARDOUS MATERIALS REGULATORY AUTHORITY**

Regulatory Agency	Authority
<i>Federal Agencies</i>	
Department of Transportation (DOT)	Hazardous Materials Transport Act - Code of Federal Regulations (CFR) 49
Environmental Protection Agency (EPA)	Federal Water Pollution Control Act Clean Air Act Resource Conservation and Recovery Act (RCRA) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Superfund Amendments and Reauthorization Act (SARA) Federal Insecticide, Fungicide and Rodenticide Act
Occupational Safety and Health Administration (OSHA)	Occupational Safety and Health Act and CFR 29
<i>State Agencies</i>	
Department of Toxic Substances Control (DTSC)	California Code of Regulations
Department of Industrial Relations (CAL-OSHA)	California Occupational Safety and Health Act, CCR Title 8
State Water Resources Control Board and Regional Water Quality Control Board	Porter-Cologne Water Quality Act Underground Storage Tank Law
Health and Welfare Agency	Safe Drinking Water and Toxic Enforcement Act
Air Resources Board and Air Pollution Control District	Air Resources Act
Office of Emergency Services	Hazardous Materials Release Response Plans/Inventory Law
Department of Food and Agriculture	Food and Agriculture Code
State Fire Marshall	Uniform Fire Code, CR Title 19

Prior to August 1992, the principal agency at the federal level regulating the generation, transport and disposal of hazardous waste was the EPA under the authority of the Resource Conservation and Recovery Act (RCRA). As of August 1, 1992, however, the California Department of Toxic Substance Control (DTSC) was authorized to implement the State's hazardous waste management program for the EPA. The federal EPA continues to regulate hazardous substances under the Comprehensive Response Compensation and Liability Act (CERCLA).

Federal Aviation Administration

The mission of the Federal Aviation Administration (FAA) organization is to provide leadership in planning and developing a safe and efficient national airport system to satisfy the needs of aviation interests of the United States, with due consideration for economics, environmental compatibility, local proprietary rights, and safeguarding the public investment. Federal Regulation 49 CFR Part 77 establishes standards and notification requirements for objects affecting navigable airspace. This notification serves as the basis for:

- Evaluating the effect of the construction or alteration on operating procedures
- Determining the potential hazardous effect of the proposed construction on air navigation
- Identifying mitigating measures to enhance safe air navigation
- Charting of new objects.

The FAA FAR Part 77 imaginary surfaces, which are used for airport design and planning purposes, are described as follows:

- Primary – Aligned (longitudinally) with each runway and extends 200 feet from each runway end.
- Approach – Longitudinally centered with the runway and extends beyond the primary surface.
- Horizontal – Horizontal plane 150 feet above the established airport elevation. Constructed by swinging arcs around the end of the primary surface.
- Conical – 20:1 slope surface extending beyond the horizontal surface.
- Transitional – Constructed to join approach and horizontal or approach and transitional surfaces.

The FAR Part 77 notification allows the FAA to identify potential aeronautical hazards in advance thus preventing or minimizing the adverse impacts to the safe and efficient use of navigable airspace. The regulations identify three-dimensional imaginary surfaces on and around airports through which no object should penetrate. All development projects under the proposed General Plan would be subject to review associated with Part 77, if obstruction into the navigable airspace is anticipated.

STATE

California Environmental Protection Agency

The California Environmental Protection Agency (Cal-EPA) and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable state and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Subsequent development under the proposed General Plan may be subject to one or more of the above laws.

Department of Toxic Substances Control

Within Cal-EPA, DTSC has primary regulatory responsibility, with delegation of enforcement to local jurisdictions that enter into agreements with the state agency, for the management of

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hazardous materials and the generation, transport and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL).

California Division of Aeronautics

The California Division of Aeronautics fosters and promotes the development of a safe, efficient, dependable, and environmentally compatible air transportation system. The Division issues permits for and annually inspects hospital heliports and public-use airports, makes recommendations regarding proposed school sites within two miles of an airport runway and authorizes helicopter landing sites at or near schools. Aviation system planning provides for the integration of aviation into transportation system planning on a regional, statewide, and national basis. The Division of Aeronautics administers noise regulation and land use planning laws that foster compatible land use around airports and encourages environmental mitigation measures to lessen noise, air pollution, and other impacts caused by aviation. The Division prohibits the construction of any structure that would penetrate an imaginary surface, unless the State Division of Aeronautics has first issued a permit allowing its construction.

LOCAL

Comprehensive Land Use Plans (CLUPS)

As stated above, portions of the Comprehensive Land Use Plan (CLUP) areas of Franklin Field, Mather Field, the Elk Grove Airport/Sunset Sky Ranch, and Borges-Clarksburg Airport, fall within the Planning Area. CLUPs are prepared by the Airport Land Use Commission (ALUC) whose purpose is to; *“Protect public health, safety, and welfare through the adoption of land use standards that minimize the public’s exposure to safety hazards and excessive levels of noise, and; “ Prevent the encroachment of incompatible land uses around public-use airports, thereby preserving the utility of these airports in the future.”* The Sacramento Area Council of Governments (SACOG) serves as the ALUC for Sacramento, Yolo, Sutter, and Yuba counties. CLUPs regulate land use in three major areas: Safety Zones, Noise Zones and Height Restrictions, and provide land use compatibility guidelines on which compatibility of land uses are determined. CLUPs also establish planning boundaries around the airport for height, noise, and safety. The Clear Zone, Approach/Departure Zone, and Overflight Zone for Franklin Field, Mather Field, Borges-Clarksburg, and Elk Grove Airport/Sunset Sky Ranch are depicted on **Figure 4.4-2**. The land use designations within these zones are consistent with each facility’s CLUP. Additionally, implementation of the proposed General Plan Land Use map and corresponding land use designations are also consistent with the CLUP’s for the facilities discussed above.

Sacramento County General Plan

The Sacramento County General Plan is used as the “blueprint” the guide future development in unincorporated portions of the County, including sections of the Planning Area that are outside the Elk Grove City limits. The following Sacramento County General Plan policies are applicable to the Planning Area outside the existing city limits of Elk Grove.

- | | |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HM-4 | The handling, storage, and transport of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards. |
| HM-5 | Support efforts to gather health information in Sacramento County and throughout California that will help public health officials identify the causes of illnesses related to hazardous materials. |

HM-6	Strongly encourage federal and state agencies to accelerate their efforts to evaluate human health impacts and establish legally enforceable standards for hazardous materials.
HM-7	Encourage the implementation of workplace safety programs and to the best extent possible ensure that residents who live adjacent to industrial or commercial facilities are protected from accidents and the mishandling of hazardous materials.
HM-8	Continue the effort to prevent ground water and soil contamination.
HM-9	Continue the effort to prevent surface water contamination.
HM-10	Reduce the occurrences of hazardous material accidents and the subsequent need for incident response by developing and implementing effective prevention strategies.
HM-11	Protect residents and sensitive facilities from incidents which may occur during the transport of hazardous materials in the County.
HM-12	Continue the effort through the Sacramento Metropolitan Air Quality Management District (AQMD) to inventory and reduce toxic air contaminants as emission standards are developed.

Sacramento County Multi-Hazard Disaster Plan

The Sacramento County Multi-Hazard Disaster Plan (SCMDP) was established to address planned response to extraordinary emergency situations associated with natural disasters and technological incidents. The Plan focuses on operational concepts related to large-scale disasters, which can pose major threats to life and property requiring unusual emergency responses. The Plan was designed to include Sacramento County as part of the California Standardized Emergency Management System (SEMS), which assigns responsibilities to support implementation of the Plan and to ensure successful response during a major disaster. The Plan also established the following emergency management goals:

- Provide effective life safety measures and reduce property loss;
- Provide for the rapid resumption of community services and businesses; and
- Provide accurate documentation and records required for cost recovery efforts.

Sacramento County Area Plan

The Sacramento County Environmental Management Department established the Sacramento County Area Plan (SCAP) as a guideline for hazardous material related accidents or occurrences. The purpose of the SCAP is *"To delineate responsibilities and actions by various agencies in Sacramento County required to meet the obligation to protect the health and welfare of the populace, natural resource (environment), and the public and private properties involving hazardous materials."* The SCAP is used for making initial decisions at a hazardous materials incident. The SCAP guidelines are used for preliminary response decisions; however, does not address all the variable and contingencies that may be associated with hazardous material incidents. The SCAP uses Level I, Level II and Level III classifications for hazardous material incidents, which are determined by the following planning basis:

- Level of technical expertise required to abate the incident;

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- Extent of Municipal, County, and State Government involved;
- Extent of evacuation of civilians; and
- Extent of injuries and/or deaths.

The SCAP also defines applicable agencies and their roles and includes a responsibilities matrix, the Sacramento County Notification Tree, Information and Incident Command Flow Charts, Scene Manager Checklists, and the Master Inventory Lists for all Sacramento County Fire Departments. According to the City of Elk Grove's Fire Chief, the EGCSF Fire Department adopted both the Sacramento County Area Plan (SCAP) and the Sacramento County Multi-Hazard Disaster Plan upon the City's incorporation. Additionally, the EGCSF Fire Department, which relies on a Fire Development Fee program to fund departmental needs, is currently in the process of updating its fee structure.

4.4.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

For purposes of this EIR, the following criteria were used in determining whether implementation of the proposed City of Elk Grove General Plan would result in a significant impact:

1. If subsequent land uses under the proposed General Plan may involve the use, production, or disposal of materials that pose a hazard to people, or to plant or animal populations in the area affected;
2. Expose populated areas to significant hazards through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
3. Expose workers or residences to hazardous materials and health risks during construction or maintenance activities; or,
4. Place land uses in designated hazardous areas inconsistent with applicable plans and policies of federal, state and local agencies.

METHODOLOGY

This analysis of hazards, human health and risk of upset included the review of existing documentation, field review of the Planning Area and consultation with applicable local, state, and federal agencies.

PROJECT IMPACTS AND MITIGATION MEASURES

Known and Unknown Hazardous Materials in the Planning Area

Impact 4.4.1 Implementation of the proposed General Plan may contain the potential for the discovery of known and unknown hazardous material contamination in areas proposed for development under the General Plan. This is considered a **potentially significant** impact.

4.4-2 11x17

Implementation of the proposed General Plan may result in known and unknown hazardous materials being discovered or encountered at specific project sites. Portions of the existing City limits have been historically used for agriculture, dairy and other farming related activities. In addition, urban land uses (e.g., commercial and industrial uses) also can result in hazardous contamination (see **Figure 4.4-1** and **Table 4.4-1**).

Additionally, there are a number of electrical transformers throughout the Planning Area that may contain polychlorinated biphenyls (PCBs). PCB transformers may be located within the existing City limits. There are no known leaking PCB transformers in the existing City limits that pose a threat to human health or safety. However, SMUD must comply with federal and state EPA regulations regarding the maintenance, storage, operation, or disposal of PCB containing equipment. In response to EPA regulations, SMUD has implemented its Transformer Replacement Program, which routinely identifies and replaces all faulty or leaking PCB transformers in its service area.

Until 1980, numerous types of building materials, such as roofing paper, shingles, drywall, drywall texturing, linoleum, and mastic, contained considerable amounts of asbestos. Many of the existing structures in the Planning Area were built prior to 1980; therefore, may have friable asbestos containing materials (ACMs). Many of these buildings may be demolished and/or removed due to development associated with the proposed General Plan. Based on the age of the structures, removal or disturbance of these structures may result in the airborne release of asbestos from ACMs.

In 1978, the Environmental Protection Agency passed legislation prohibiting the use of lead in paints and other construction materials. There are several buildings and structures located in the Planning Area that were constructed prior to 1978. Therefore, it is likely that many of the older structures contain lead based paint materials. Implementation of the proposed General Plan may include the demolition and removal of some of these structures.

General Plan Policies and Action Items

- SA-6 *The City of Elk Grove will work to identify and eliminate hazardous waste releases from both private companies and public agencies.*

- SA-7 *Storage of hazardous materials and waste shall be strictly regulated, consistent with state and federal law.*

- SA-7-Action 1 *Regularly review the City's codes to ensure that City regulations reflect the most up-to-date standards for storage, handling, and use of toxic materials.*

- SA-7-Action 2 *Secondary containment and periodic examination shall be required for all storage of hazardous and toxic materials, consistent with the requirements of state or federal law.*

- SA-7-Action 3 *As part of the review and approval of development plans and building permits, ensure that secondary containment is provided for hazardous and toxic materials.*

Mitigation Measure

The following mitigation measure shall be incorporated into the City of Elk Grove General Plan as a policy under Goal 1 of the Safety Element.

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MM 4.4.1 Prior to site improvements for properties that are suspected or known to contain hazardous materials and sites that are listed on or identified on any hazardous material/waste database search shall require that the site and surrounding area be reviewed, tested, and remediated for potential hazardous materials in accordance with all local, state, and federal regulations.

Implementation of proposed General Plan policies SA-6 and SA-7 and its associated action items, as well as Mitigation Measure MM 4.4.1 would reduce the potential impacts associated with known and unknown hazardous contamination to a **less than significant** level.

Airport Operations

Impact 4.4.2 Implementation of the proposed General Plan could result in safety hazards associated with airport operations to occur in areas proposed for development. This is considered a **less than significant** impact.

Airports establish planning boundaries for height, noise and safety around each airport as well as policies that determine the compatibility of new land uses proposed within each planning area boundary. The development associated with the proposed General Plan would include development within the Comprehensive Land Use Plan (CLUP) area of the Sunset Sky Ranch/Elk Grove Airport. State Airport Land Use Commission (ALUC) law requires a jurisdiction to either amend its General Plan and other land use regulations to achieve consistency with airport CLUPs adopted by the ALUC. Additionally, the Federal Aviation Regulations (FAR) Part 77 defines a series of imaginary surfaces surrounding all public use airports.

Any proposed object or structure that would penetrate any of these imaginary surfaces as they apply to the affected airport facilities is considered by the Federal Aviation Administration (FAA) to be an obstruction to air navigation. An obstruction to air navigation may not be a hazard to air navigation, however, the FAA presumes it to be a hazard and treats it as such until an FAA aeronautical study had determined that it does not have a substantial adverse effect on the safe use of the navigable airspace by aircraft. The imaginary surfaces the FAA uses to determine whether or not a structure or an object would be an obstruction to air navigation includes the primary surface, approach surface, horizontal surface, conical surface, and transitional surfaces. The CLUP determines compatibility of surrounding land uses based upon noise levels associated with the airport operations and exposure of persons to crash hazards associated with aircraft and height restrictions. Implementation of the proposed General Plan would result in the East Elk Grove Policy Area being developed within the CLUP area of Sunset Sky Ranch/Elk Grove Airport. The East Elk Grove Specific Plan text identifies that residential lots must be five acres or larger within the airport noise contours. The land uses designated in the East Elk Grove Specific Plan are consistent with the Sunset Sky Ranch Comprehensive Land Use Plan. Additionally, rural residential development is proposed for development within the CLUP area of Mather Field. However, all development projects must comply with the above federal, state and local regulations with compliance determined on a project-by-project basis. Development under this scenario has the potential to place structures or objects in a height restriction area or safety zone, which may be considered an air navigation hazard according to FAA FAR Part 77 or may result in the placement of structures or facilities that are inconsistent with the applicable CLUPs.

General Plan Policies and Action Items

- CI-21 *The City shall consider the recommendations in the Comprehensive Land Use Plans (CLUPs) for airports within or adjacent to Elk Grove in the review of potential land uses or projects.*
- SA-1 *The City will seek to reduce to acceptable levels the risk of injury, death, and property damage resulting from all reasonably foreseeable safety hazards in Elk Grove.*

Implementation of proposed General Plan policies CI-21 and SA-1 and current land use designations would reduce potential air operation impacts to a **less than significant** level.

Mitigation Measures

None required.

Exposure to Hazards Associated with Facilities Utilizing Hazardous Materials

Impact 4.4.3 Implementation of the proposed General Plan could result in accidental incidents and intentional acts at existing and future facilities utilizing hazardous materials. This is considered a **less than significant** impact.

As identified in Section 4.4.1 (Existing Setting), there are a variety of facilities (e.g., gas stations, cleaners, auto repair sites, industrial facilities, maintenance yards) in the City that handle hazardous materials. While the effects of hazardous material releases from facilities identified in **Table 4.4-1** are the most common and do not typically expose large population areas in the City to hazards, there is potential for large hazardous material releases from existing and future uses that could impact existing and future population areas.

Of particular concern are offsite hazards from accidental incidents and intentional acts at the Suburban Propane and Georgia Pacific facilities. As discussed previously, several studies have analyzed the types of hazards, incidence of events, worst-case effects and the extent of those effects, and specific conditions associated with worst-case effects that could be associated with these facilities. Offsite hazards to human health and property include exposure to overpressure of one psig, radiant heat, flash fire, shrapnel and formaldehyde vapor. The Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities (Quest, 2003) evaluates and estimates the probability of accidental incidents and intentional acts that could result in offsite impacts to determine if such events would be considered “reasonably foreseeable”. Two accident scenarios have been evaluated to determine the probability of an incident and the potential to effect off-site land areas. These scenarios include accidental incidents and intentional acts and are further described below. **Tables 4.4-2** and **4.4-4** summarize the offsite extent of accident incidents and intentional acts as well as the estimated probability of occurrence.

Accidental Incidents at Suburban Propane and Georgia Pacific Facilities

The accident probability of an offsite hazard was determined based on historical accidental release data, published data sources and the use of event trees to cover the range of possibilities that could occur as the result of an initial event (Quest, 2003). As shown in **Table 4.4-4**, offsite hazards (shrapnel impact, radiant heat exposure, overpressure [1.0 psig], flash fire and formaldehyde exposure) were identified at 0.5 miles and beyond (0.5 miles was utilized given

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Table 4.4-4
Summary of Hazard Impacts Exceeding 0.5 Miles from Source

Initial Event	Scenario I.D. ¹	Hazard	Extent of Hazard (miles)	Accidental Probability		Terrorist-Induced Probability	
Catastrophic failure of one 60,000-gallon propane tank	Q-3	Shrapnel impact	0.5	1.0×10^{-11}	One chance in 100,000,000,000 a year	3.92×10^{-11}	One chance in 25,000,000,000 a year
Simultaneous catastrophic failure of four 60,000-gallon propane tanks	K-3	Shrapnel impact	0.5	0	0	1.57×10^{-10}	One chance in 6,400,000,000 a year
	K-3	Fireball	0.5	0	0	7.06×10^{-6}	One chance in 140,000 a year
Catastrophic failure of one 33,000-gallon propane railcar	JD-1	Fireball [200 kJ/m ²]	0.5	2.0×10^{-7}	One chance in 5,000,000 a year	7.06×10^{-6}	One chance in 140,000 a year
	JD-1	Shrapnel impact	0.5	1.25×10^{-12}	One chance in 800,000,000,000 a year	3.92×10^{-11}	One chance in 25,000,000,000 a year
	Q-4	Shrapnel impact	0.5	1.25×10^{-12}	One chance in 800,000,000,000 a year	3.92×10^{-11}	One chance in 250,000,000,000 a year
Catastrophic failure of one 10,000-gallon propane tank truck	Q-5	Shrapnel impact	0.5	2.5×10^{-12}	One chance in 400,000,000,000 a year	3.92×10^{-11}	One chance in 25,000,000,000 a year
Major failure of one 12,000,000-gallon refrigerated storage tank	JD-2	Overpressure [1.0 psig]	0.5	2.38×10^{-7}	One chance in 4,200,000 a year	3.11×10^{-7}	One chance in 3,200,000 a year
	K-2	Overpressure [1.0 psig]	0.5	2.38×10^{-7}	One chance in 4,200,000 a year	3.11×10^{-7}	One chance in 3,200,000 a year
	Q-2	Flash fire [LFL]	1.5	3.56×10^{-7}	One chance in 2,800,000 a year	4.66×10^{-7}	One chance in 2,100,000 a year

Table 4.4-4
Summary of Hazard Impacts Exceeding 0.5 Miles from Source
(Continued)

Initial Event	Scenario I.D. ¹	Hazard	Extent of Hazard (miles)	Accidental Probability		Terrorist-Induced Probability	
Major failure of both 12,000,000-gallon refrigerated storage tanks	K-1	Overpressure [1.0 psig]	0.75	9.58×10^{-9}	One chance in 104,000,000 a year	3.11×10^{-7}	One chance in 3,200,000 a year
	JD-3	Overpressure [1.0 psig]	0.5	9.58×10^{-9}	One chance in 104,000,000 a year	3.11×10^{-7}	One chance in 3,200,000 a year
	JD-3	Pool fire* [200 kJ/m ²]	0.5	8.04×10^{-6}	One chance in 12,400,000 a year	7.77×10^{-6}	One chance in 130,000 a year
	K-1	Flash fire [LFL]	0.5	1.44×10^{-3}	One chance in 69,400,000 a year	4.66×10^{-7}	One chance in 2,100,000 a year
	Q-1	Flash fire [LFL]	1.5	1.44×10^{-3}	One chance in 69,400,000 a year	4.66×10^{-7}	One chance in 2,100,000 a year
Full-bore rupture of 3-inch refrigerated propane piping	DM-3 ²	Overpressure [1.0 psig]	0.5	6.24×10^{-5}	One chance in 16,000 a year	2.51×10^{-7}	One chance in 4,000,000 a year
Full-bore rupture of 6-inch refrigerated propane piping	DM-4 ²	Overpressure [1.0 psig]	0.75	1.4×10^{-5}	One chance in 71,500 a year	2.83×10^{-7}	One chance in 3,500,000 a year
Major failure of formalin tank at Georgia-Pacific	JD-4	Formaldehyde exposure [1,500 ppm-min]	1.0	$4.67 \times 10^{-6} \ddagger$	One chance in 215,000 a year	$7.85 \times 10^{-7} \ddagger$	One chance in 1,270,000 a year
	K-5	Formaldehyde exposure [1,500 ppm-min]	0.75	$4.67 \times 10^{-6} \ddagger$	One chance in 215,000 a year	$7.85 \times 10^{-7} \ddagger$	One chance in 1,270,000 a year

* Jukes and Dunbar treat this as a "flash fireball fire."

‡ Not modified for weather conditions. When weather conditions are factored, the probability is one chance in 5,350,000 a year. For the accidental probability and one chance in 31,800,000 a year for the terrorist-induced probability

1. The reader is referred to table 4.4-2 regarding descriptions of scenarios.

2. Quest report (2003) identifies that these events identified by Dames and Moore are not accurate regarding overpressure hazards.

Source, Quest 2003

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that existing and planned population areas and uses that would consist of a large congregation of people are located just outside this distance).

With the exception of offsite hazards associated with overpressure from rupture of refrigerated propane piping at Suburban Propane (DM-3 and DM-4 – see **Tables 4.4-2** and **4.4-4**) and a major failure of the formalin tank at Georgia Pacific (JD-4 and K-5 – see **Tables 4.4-2** and **4.4-4**), all other potential offsite hazards were identified as having a probability greater than one chance in 1,000,000 a year. The City has defined unlikely events that are not considered reasonably foreseeable as events with a one chance in 1,000,000 or greater a year under General Plan Policy SA-3. This determination is supportable given criteria used by the Health and Safety Executive in the United Kingdom (Risk Criteria for Land Use Planning in the Vicinity of Major Industrial Hazards that defines acceptable individual risk criteria as less than one chance in 1,000,000 per year for a fatality) and similar criteria used by the Environmental Protection Agency of Western Australia. In addition, this probability is substantially lower than probabilities associated with individual risks of fatality associated with risks the general public is commonly exposed to (e.g. motor vehicle accidents: one chance in 6,125 a year; homicide: one chance in 10,800; drowning: one chance in 68,035; rail travel: one chance in 687,400) (City of Elk Grove, 2000).

In regards to offsite hazards associated with overpressure from rupture of refrigerated propane piping at Suburban Propane (DM-3 and DM-4 – see **Tables 4.4-2** and **4.4-4**), these incidents were originally identified by Dames and Moore in their 1992 and 1998 reports associated with rupture of 3-inch and 6-inch diameter pipes. Based on technical review of these reports Quest determined that the results of the Dames and Moore reports do not appear to be accurate as it is not consistent with technical studies and large-scale experimental data associated with propane releases (Quest, 2003). Thus, the conclusions of the Dames and Moore reports regarding these events are not considered appropriate for determination of offsite hazards.

Hazards associated with a major failure of the formalin tank at Georgia Pacific (JD-4 and K-5 – see **Tables 4.4-2** and **4.4-4**) were reported by the report prepared by Jukes and Dunbar and materials provided by Koopman, and identified hazards out to a distance of one mile under worst-case atmospheric conditions. However, worst-case atmospheric weather conditions (e.g., low winds and stable atmospheres) do not exist in the Planning area at all times, but rather less than 4 percent of the time (Quest, 2003). When factoring typical weather conditions, the probability of formaldehyde exposure out to one mile is one chance in 5,350,000 a year. In addition, it would take approximately 27 minutes after the release of the formaldehyde to reach one mile at the concentration level of concern and another 60 minutes of exposure before adverse health effects. This would give the emergency responders 87 minutes to evacuate the area.

Intentional Acts at Suburban Propane and Georgia Pacific Facilities

The Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities Report (see **Appendix 4.4**) also estimated the probability of an intentional act (e.g., terrorism and vandalism) at the Suburban Propane and Georgia Pacific facilities that could result in an offsite hazard. This analysis was done as a result of growing concerns associated with terrorist activities in the United States after the terrorist attack on the World Trade Center on September 11, 2001. Intentional acts at large-scale chemical and fuel facilities are rare in the United States and there is currently no reliable historical release data on such events. For the purposes of estimating the probability of an intentional act resulting in an offsite hazard, the Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities Report utilized existing data from the Environmental Protection Agency regarding the number of

toxic and flammable fuel facilities with the potential to impact a population area. It is identified that the Suburban Propane and Georgia Pacific facilities are among 12,711 other such facilities in the United States that have the potential to impact 100 people or more. In addition, the Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities Report also utilized the first bombing of the World Trade Center in February 1993 as the first terrorist act in the United States (ten years ago). This data was utilized in order to estimate the probability of the intentional act that becomes the initial event resulting in an offsite hazard, which was estimated at 7.85×10^{-6} a year (see **Appendix 4.4**). The probability of an off-site hazard was then determined based on historical accidental release data, published data sources, and the use of event trees to cover the range of possibilities that could occur as the result of the initial intentional act (Quest, 2003). The resulting probabilities of an offsite hazard occurring under the events evaluated in the hazard studies done on these facilities is provided in **Table 4.4-4**.

As shown in **Table 4.4-4**, there are three offsite hazards associated with the Suburban Propane facility following a successful intentional act with a probability greater than one chance in 1,000,000 a year. These events consist of simultaneous catastrophic failure of four 60,000-gallon propane tanks (K-3 see **Tables 4.4-2** and **4.4-4**), catastrophic failure of one 33,000-gallon propane railcar (JD-1 see **Tables 4.4-2** and **4.4-4**) and major failure of both 12,000,000-gallon refrigerated storage tanks (JD-3 see **Tables 4.4-2** and **4.4-4**). The offsite hazards associated with these events would be largely contained in the surrounding industrial area and is not expected to impact existing or planned areas that would contain large population areas set forth under the proposed General Plan. In addition, the Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities Report identifies that the Jukes and Dunbar report's analysis of hazards associated with the failure of the refrigerated storage tanks included incorrect assumptions regarding estimations of the time associated with the development of a vapor cloud and estimations on hazards associated with the failure of both refrigerated storage tanks (Quest, 2003). No detailed review of Koopman's analysis could be made given that only the conclusions of this analysis were provided to the City. Koopman's report was not made available to the City.

Conclusions

The Review of Suburban Propane Hazards Analysis Studies and Evaluation of Accident Probabilities Report identifies the following three off-site hazards (accidental incidents and intentional acts) as having potential to impact General Plan land uses that would contain large population areas:

Flash Fire – following failure of one or both refrigerated storage tanks at Suburban Propane facility.

Impact extent:	out to 1.5 miles
Accidental incident probability:	one chance in 2,800,000 a year
Intentional act probability:	one chance in 2,100,000 a year

Vapor cloud explosion – following failure of both refrigerated storage tanks at Suburban Propane facility.

Impact extent:	out to 0.75 miles
Accidental incident probability:	one chance in 104,000,000 a year
Intentional act probability:	one chance in 3,200,000 a year

4.4 HUMAN HEALTH/RISK OF UPSET

Formaldehyde exposure – following failure of formalin tank at the Georgia Pacific facility.

Impact extent:	out to 1.0 mile
Accidental incident probability:	one chance in 5,350,000 a year
Intentional act probability:	one chance in 31,800,000 a year

General Plan Policies and Action Items

- SA-1 *The City will seek to reduce to acceptable levels the risk of injury, death, and property damage resulting from all reasonably foreseeable safety hazards in Elk Grove.*
- SA-2 *In considering the potential impact of hazardous facilities on the public and/or adjacent or nearby properties, the City shall consider the consequences of a reasonable foreseeable event. Events need not be considered if their likelihood is so remote as to be considered unlikely to occur within any given year.*
- SA-3 *The City considers an “unlikely” event to be any event with an individual risk level of less than 10^{-6} (1,000,000) per year. A “likely” event is any event with an individual risk level of 10^{-6} (1,000,000) or more per year.*
- SA-6 *The City of Elk Grove will work to identify and eliminate hazardous waste releases from both private companies and public agencies.*
- SA-7 *Storage of hazardous materials and waste shall be strictly regulated, consistent with state and federal law.*
- SA-7-Action 1 *Regularly review the City’s codes to ensure that City regulations reflect the most up-to-date standards for storage, handling, and use of toxic materials.*
- SA-7-Action 2 *Secondary containment and periodic examination shall be required for all storage of hazardous and toxic materials, consistent with the requirements of state or federal law.*
- SA-7-Action 3 *As part of the review and approval of development plans and building permits, ensure that secondary containment is provided for hazardous and toxic materials.*
- SA-8 *Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.*
- SA-8-Action 1 *Support continued enforcement of permitting requirements for radioactive materials, and enforce public safety standards for the use of these materials, including the placarding of transport vehicles.*
- SA-9 *Industries which store and process hazardous or toxic materials shall provide a buffer zone between the installation and the property boundaries sufficient to protect public safety. The adequacy of the buffer zone shall be determined by the City of Elk Grove.*

Implementation of the proposed General Plan policies SA-1, SA-2, SA-3, SA-6, SA-7, SA-8, SA-9, and associated action items, would reduce the potential impacts associated with public hazards resulting from accidental and intentional releases to a **less than significant** level.

Mitigation Measures

None required.

Railroad-at-grade Crossings

Impact 4.4.4 Implementation of the proposed General Plan could result in public hazards associated with railroad-at-grade crossings. This is considered a **potentially significant** impact.

As discussed above, there are several at-grade crossings in the Planning Area, including six within the existing city limits. By their nature, at-grade railroad crossings often contribute to traffic problems, delays and accidents. The at-grade crossings in the City have led to increased traffic delays and in some incidences resulted in accidents between motor vehicles and trains. The existing at-grade crossings are located at Calvine Road, Sheldon Road, Elk-Grove Florin Road, Bond Road, Elk Grove Boulevard, and Grant Line Road. The City initiated a study, conducted by Carter Burgess to investigate grade separation alternatives, which was completed in May 2002. The study identified enhancements for safety, cost estimates, and the potential impacts to adjacent properties, the roadway system and traffic flow. The study included features, traffic data and accident information, and improvement recommendations for each facility within the City.

Recommendations and improvements at the Elk Grove Boulevard crossing include signals, arms, and a raised medium to prevent vehicular traffic from going around the crossing arms. The City has applied for approval to install automated warning horn systems at the crossing at Elk Grove-Florin Road and the crossing at Bond Road. Both requests are currently under review with the CPUC.

The above changes would improve the safety and reduce potential accident occurrences at the railroad-at-grade crossings within the Planning Area. Implementation of the proposed General Plan would not expose people to additional railroad-at-grade crossing occurrences or accidents nor would it adversely affect railroad operations in the Planning Area.

General Plan Policies and Action Items

- SA-4 *The City will cooperate with other local, regional, state, and federal agencies, and with rail carriers in an effort to secure the safety of all residents and businesses in Elk Grove.*

- SA-24 *The City shall take all appropriate measures to ensure that railroad crossings in Elk Grove are made as safe as possible.*

- SA-24-Action 1 *The City will coordinate with the railroads operating in Elk Grove to ensure that all appropriate safety measures are implemented in their operations in the city.*

- SA-24-Action 2 *The City will seek to improve the safety at rail crossings by continuing to investigate improvements in crossing gates and warning devices.*

4.4 HUMAN HEALTH/RISK OF UPSET

Mitigation Measures

The following mitigation measure shall be incorporated into the City of Elk Grove General Plan as an action item under Goal 1 of the Safety Element.

MM 4.4.4 The City shall initiate as well as cooperate in improvements at existing railroad-at-grade crossings to improve public safety. This may include construction of grade-separated crossings and other appropriate safety features.

Implementation of General Plan policies SA-4 and SA-24 with its associated action items, as well as mitigation measure MM 4.4.4 would reduce the potential impacts associated with railroad-at-grade crossings to a **less than significant** level.

4.4.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

This cumulative analysis considers the entire Sacramento Region, including Sacramento County and the cities of Sacramento, Folsom, Rancho Cordova, and Galt. Additionally, this cumulative analysis includes buildout under the proposed Elk Grove General Plan and potential development within the Urban Study Areas. The Urban Study Areas are intended to remain in their existing land use condition (open space, agricultural lands and rural residential). The proposed General Plan does not specifically identify that this area is to be incorporated into the City and urbanized and are thus not designated with any specific urban land uses. The General Plan simply identifies this area as an area that should be carefully studied prior to consideration of development upon buildout of the City. Therefore, the Planning Area as a whole must be considered for the purpose of evaluation of human health and safety impacts on a cumulative level. Implementation of the proposed General Plan and development in the Urban Study Area may contribute to a cumulative increase of risk associated with hazardous material sites (i.e., Suburban Propane and Georgia-Pacific Resin facility), railroad-at-grade crossings, asbestos building materials and lead based paints, and flooding. Additionally, future land uses may utilize hazardous materials during the course of daily operations, which could pose a threat to residents in the immediate area or the environment.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Hazard Impacts

Impact 4.4.5 Implementation of the proposed General Plan and potential development in the Urban Study Areas could result in site-specific hazards being encountered. This is considered a **cumulative significant** impact.

Development associated with the proposed General Plan and future development within the Urban Study Areas could result in increased hazard related impacts; however, these impacts would be site-specific. Proposed General Plan policies and mitigation measures identified under Impacts 4.4.1 through 4.4.4 would assist in reducing the impacts. Federal, state and local regulations would determine appropriate land uses within the vicinity of the airports in the Planning Area. Anticipated development projects (e.g., residential, commercial, park, and recreational land uses) that would occur under the proposed General Plan and the Urban Study Areas, would include, but not be limited to, public and utility extension projects, roadway widenings, and extensions, intersection improvements, water system distribution improvements and trail extensions. These proposed land uses would not significantly increase human health or

safety risks. However, development of the Urban Study Area south of Grant Line Road could result in safety issues with the Sunset Skyranch Airport.

General Plan Policies and Action Items

- CI-21 *The City shall consider the recommendations in the Comprehensive Land Use Plans (CLUPs) for airports within or adjacent to Elk Grove in the review of potential land uses or projects.*
- SA-1 *The City will seek to reduce to acceptable levels the risk of injury, death, and property damage resulting from all reasonably foreseeable safety hazards in Elk Grove.*
- SA-2 *In considering the potential impact of hazardous facilities on the public and/or adjacent or nearby properties, the City shall consider the consequences of a reasonable foreseeable event. Events need not be considered if their likelihood is so remote as to be considered unlikely to occur within any given year.*
- SA-6 *The City of Elk Grove will work to identify and eliminate hazardous waste releases from both private companies and public agencies.*
- SA-7 *Storage of hazardous materials and waste shall be strictly regulated, consistent with state and federal law.*
- SA-7-Action 1 *Regularly review the City's codes to ensure that City regulations reflect the most up-to-date standards for storage, handling, and use of toxic materials.*
- SA-7-Action 2 *Secondary containment and periodic examination shall be required for all storage of hazardous and toxic materials, consistent with the requirements of state or federal law.*
- SA-7-Action 3 *As part of the review and approval of development plans and building permits, ensure that secondary containment is provided for hazardous and toxic materials.*
- SA-8 *Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.*
- SA-8-Action 1 *Support continued enforcement of permitting requirements for radioactive materials, and enforce public safety standards for the use of these materials, including the placarding of transport vehicles.*
- SA-9 *Industries which store and process hazardous or toxic materials shall provide a buffer zone between the installation and the property boundaries sufficient to protect public safety. The adequacy of the buffer zone shall be determined by the City of Elk Grove.*

Mitigation Measure

The following mitigation measure shall be incorporated into the City of Elk Grove General Plan as an action item under Policy CI-21 of the Circulation Element.

4.4 HUMAN HEALTH/RISK OF UPSET

MM 4.4.5 The City shall ensure that new development near airports be designed to protect public safety from airport operations consistent with recommendations and requirements of the Airport Land Use Commission, Caltrans, and the Federal Aviation Administration.

Implementation of General Plan policies CI-21, SA-1, SA-2, SA-6 through SA-9 and associated action items, as well as mitigation measure MM 4.4.5 would reduce this impact to **less than significant**.

Cumulative Exposure to Hazards Associated with Facilities Utilizing Hazardous Materials

Impact 4.4.6 Implementation of the proposed General Plan and the potential development of the Urban Study Areas could result in the exposure of populated areas to accidental incidents and intentional acts at existing and future facilities utilizing hazardous materials. This is considered a **less than significant** cumulative impact.

As identified in Impact 4.4.3, there are a variety of facilities (e.g., gas stations, cleaners, auto repair sites, industrial facilities, maintenance yards) in the City that handle hazardous materials. While the effects of hazardous material releases identified in **Table 4.4-1** are the most common and do not typically expose large population areas in the City to hazards, there is potential for large hazardous material releases from existing and future uses that could impact existing and future population areas, including potential development of the Urban Study Areas.

Of particular concern are offsite hazards from accidental incidents and intentional acts at the Suburban Propane and Georgia Pacific facilities. As described under Impact 4.4.3 reasonably foreseeable (annual probability greater than one chance in 1,000,000) offsite hazards associated with these facilities from accidental incidents and intentional acts are currently limited to a 0.5-mile radius from the Suburban Propane facility, which does include a portion of the eastern Urban Study Area adjacent to Grant Line Road.

General Plan Policies and Action Items

SA-1 The City will seek to reduce to acceptable levels the risk of injury, death, and property damage resulting from all reasonably foreseeable safety hazards in Elk Grove.

SA-2 In considering the potential impact of hazardous facilities on the public and/or adjacent or nearby properties, the City shall consider the consequences of a reasonably foreseeable event. Events need not be considered if their likelihood is so remote as to be considered unlikely to occur within any given year.

SA-3 The City considers an "unlikely" event to be any event with an individual risk level of less than 10^{-6} (1,000,000) per year. A "likely" event is any event with an individual risk level of 10^{-6} (1,000,000) or more per year.

SA-3-Action 1 As part of the environmental review process for proposed projects, the City will analyze potential safety-related impacts resulting from or affecting new development which could cause or be affected by "likely" events. This analysis shall include the potential for fatalities, injury, and property damage resulting from events considered likely to occur (as defined by Policy SA-3).

Implementation of the proposed General Plan policies SA-1 through SA-3 and its associated action item would reduce the potential impacts associated with public hazards resulting from accidental and intentional releases to a **less than significant** level by requiring future development involving concentrated population areas to avoid reasonable foreseeable hazards.

Mitigation Measures

None required.

REFERENCES

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